CLAIMS

The claimed inventions are:

1. A process for preparing roughened copper surfaces suitable for subsequent multilayer lamination, said process comprising the steps of: (a) applying a highly built alkaline cleaning solution to a copper surface to provide a substantially clean copper surface; and (b) dipping the clean copper surface into an adhesion promoting composition to provide a uniform roughened copper surface suitable for subsequent multilayer lamination, said adhesion promoting composition consisting essentially of an oxidizer, a pH adjuster, a topography modifier, and at least one of a uniformity enhancer and a coating promoter.

2. The process according to claim 1, said adhesion promoting composition including a coating promoter.

3. A process for increasing the adhesion of a dielectric material to a metal surface, wherein the metal surface comprises copper or copper alloys, said process comprising:

(a) contacting the metal surface with an adhesion promoting composition comprising an adhesion-promoting effective amount of:

(1) an oxidizer;

(2) an acid;

(3) a topography modifier; and

(4) a coating promoter;

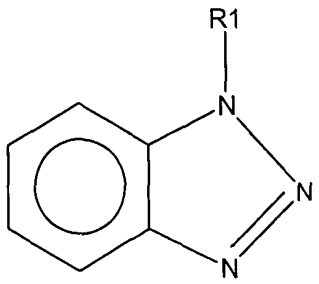
(b) bonding the dielectric material to the metal surface.

4. A process according to claim 3 wherein the adhesion promoting composition further comprises a uniformity enhancer.

5. A process according to claim 3 wherein the topography modifier is a 5-membered aromatic fused N heterocyclic compound, wherein the N heterocyclic ring has a nitrogen atom at position 1 bonded to a hydrogen atom.

6. A process according to claim 3 wherein the coating promoter is a 5-membered aromatic fused N-heterocyclic compound with 1 to 3 nitrogen atoms in the fused ring, wherein none of said nitrogen atoms are bonded to a hydrogen atom.

7. A process according to claim 3 wherein the coating promoter has the following structure:



wherein R1 is selected from the group consisting of hydroxyl groups, amino groups, alkyl groups, hydroxyalkyl groups, aminoalkyl groups, nitroalkyl groups, mercaptoalkyl groups, and alkoxy groups.

8. A process according to claim 3 wherein the coating promoter is 1-hydroxybeznotriazole.